Acta Mineralogica-Petrographica, Szeged, XXII/2, 285—296, 1976

PELECYPODS FROM THE LATE TRIASSIC OF THE SOUTH-GEMERICUM I.

K. BALOGH

In this paper it is presented an initiation of formal paleontological description of pelecypods yielded by certain members of the Triassic of South-Gemeric type. These fossils from the families *Halobiidae* and *Monotidae* are not only of great stratigraphic value but also good indicatives of the basinal facies or the vicinity of that. Consequently, these are worthy of not only placing them in faunal lists of geological reports or summaries, but presenting them in text and figures as objects the existence and determinations of which can be easily controlled.

The majority of the material described here came from the Hungarian part of the Gemericum. However, there are references to some specimens, which were firstly collected by Hungarian geologists from Slovakian areas near to the border, the descriptions of which — despite of their importance — were hitherto not available. With this long-need work the present author presumes to return this museum material back into the international scientific current.

In this work pelecypods of five localities are presented to start with.

1. *Daonella (Daonella) lommeli* (WISSMANN): Škalica-hill, to the west of Gemerska Hôrka (Özörény). — Late Ladinian (Longobardian).
2. *Halobia rugosa* GÜMBEL: Rudabánya; Borehole Rb—382, 190 to 193 m depth. — Middle Carnian (Julian).
3. *Halobia charlyana* MOJSISOVICS: Szádvár, to the north of Szögliget. — Middle part of the Lower Norian ("Lac").
4. *Halobia styriaca* (MOJSISOVICS): 300 m south of the SE outlet of Szőlősardó. — Lowert part of the Lower Norian ("Kerri Zone").
5. *Monotis (Monotis) salinaria salinaria* (SCHLOTHEIM): Silicka Brezova (Szádvárborsa), on the southeastern foot of the Dét-hill. — Middle Norian ("Alaun").

Family: Halobiidae DIENER, 1925; emend. ICHIKAWA, 1958
Subfamily: *Halobiinae* ICHIKAWA, 1958
Genus: *Daonella* MOJSISOVICS, 1874
Subgenus: *Daonella* s. str. SPECIALE, 1967
Type species: *Halobia lommeli* WISSMANN, 1841

Daonella (Daonella) lommeli (WISSMANN) 1841

PLATE I, *Figs. 1—2*

1841. *Halobia lommeli* WISSMANN in MÜNSTER, p. 22; Plate 16, *Fig. 11*
1851. *Halobia lommeli* — EICHWALD, p. 104; Plate 2, *Fig. 1*
1858. *Posidonomya lommeli* — STOPPANI, p. 93; Plate 19, *Fig. 6*

1874. *Daonella lommeli* — MOJSISOVICS, p. 19; Plate 2, *Figs. 13—14*
1878. *Halobia lommeli* — LEPSIUS, p. 356; Plate 2, *Figs. 4a—b*
1892. *Halobia lommeli* — ROTHPLETZ, p. 93; Plate 14, *Figs. 11—12* (non 6)
1893. *Daonella lommeli* — MARIANI, p. 19; Plate 2, *Fig. 5*
1895. *Halobia lommeli* — SALOMON, pp. 83, 114, 154; Plate 5, *Figs. 2—3*
1899. *Daonella* cf. *lommeli* — BITTNER, p. 33; Plate 7, *Figs. 1—2*
1906. *Daonella lommeli* — ARTHABER; Plate 38, *Fig. 4*
1908. *Daonella lommeli* — DIENER, p. 9; Plate 3, *Figs. 1—5*
1912. *Daonella lommeli* — ARTHABER, p. 192; Plate 18, *Fig. 4*
1925. *Daonella lommeli* — SIMIONESCU, p. 9; Plate 1, *Fig. 3*
1952. *Monotis (Daonella) lommeli* — DECHASEAUX, p. 277; *Fig. 64*
1958. *Monotis (Daonella) lommeli* — MÜLLER, p. 458; *Fig. 544*
1961. *Daonella lommeli* — KAJMAKOVIĆ; Plate 4. *Figs 1—2*
1963. *Daonella lommeli* — KOBAYASHI, p. 109; Plate 5, *Fig. 6*
1963. *Daonella lommeli* — STEFANOV, p. 91; Plate 2, *Figs. 1—2*
1964. *Daonella lommeli* — LEONARDI, G; Plate 3, *Fig. 1*
1966. *Daonella lommeli* — SCANDONE and DE CAPOA; Plate 3, *Fig. 1*
1967. *Daonella lommeli* — LEONARDI, P; Plate 24, *Figs. 5—6;* Plate 29, *Fig. 3*
1967. *Daonella lommeli* — SCANDONE; Plate 3, *Figs. 1—2*
1967. *Daonella (Daonella) lommeli* — SPECIALE, p. 1100; Plate 81, *Fig. 5*
1970. *Daonella (Daonella) lomelli* — DE CAPOA, p. 46; Plate 5, *Figs. 1—8*
1971. *Daonella lommeli* — ASTACHOWA, p. 37; Plate 1, *Figs. 1—2*
1974. *Daonella lommeli* — KRYSTYN and GRUBER, p. 283; *Figs. 2a—b*

Material: Fragments of 3 internal and 2 external casts.

Description: As it is shown by the growth lines on one of the casts, length exceeds height. The umbo is orthogyrale and placed before the median line. The broad primary ribs start 1,5—2 mm below the umbo, and their repeated bifurcations toward the margin result in characteristic bunched ribs, which consist of two ribs on the middle of the smaller and four ribs on the larger valves. Concentric rugae are restricted to the umbonal region. Below the hinge line the triangular anterior and posterior parts of the valves are more flattened than the other parts of the valves. The radial ribbing is continuous to the hinge margin on the more flattened parts of the valves (Plate I, *Fig. 2*).

Remarks: The first to recognize the Škalica occurence of this species was L. BARTKÓ (1953), and subsequently this record was reinforced by K. BALOGH (1953, p. 63; 1964, p. 449).

Locality: West of the village Gemerská Hôrka (Özörény), on the western side of the Škalica-hill's top.

Collector: L. BARTKÓ, 1940.

Rock-type: Grey Wetterstein Limestone.

Age: Upper Ladinian (Longobardian).

Reposition: Museum of the Hungarian Geological Institute, Budapest.

Family: Halobiidae DIENER, 1925; emend. ICHIKAWA, 1958
Subfamily: *Halobiinae* ICHIKAWA, 1958
Genus: *Halobia* BRONN, 1830
Type species: *Halobia salinarum* BRONN, 1830

Halobia rugosa GÜMBEL, 1861

1861. *Halobia rugosa* GÜMBEL, p. 275
1863. *Posidonomya semiradiata* SCHAFTHÄUTL, p. 368; Plate 69a. *Fig. 9*
1865. *Halobia haueri* STUR, p. 44
1874. *Halobia rugosa* — MOJSISOVICS, p. 31; Plate 4, *Figs. 7—8*
1906. *Halobia rugosa* — ARTHABER; Plate 42, *Figs. 1—2*

Material: 15 external and 17 internal flattened cast-fragments. 11 specimens are certainly left, 6 specimens are certainly right valves.

Description: The excentric umbo is 6—9 mm high, smooth, only with concentric rugae. It is markedly separated from the radially ribbed part of the obliquely oval valve. The unequal ribs are fine and sharp, sometimes a little wavy or curved after their starting points. The ornament is grouped into clearly visible bunches of 4 or 6 ribs. The growth-rugae continue also on the ribbed valve-parts. At the crossing of these and the radial ribs fine granulation is visible. The posterior edge of the hinge margin is bordered by a very narrow, smooth band. The relatively broad, anterior auricle with ribbing on its lower part can be recognized only on a right and a left valve.

Locality: Rudabánya; Borehole Rb—382, 190 to 193 m depth.

Rock-type: Dark-grey claymarl.

Collector: L. Imreh.

Age: Middle Carnian (Julian).

Reposition: Museum of the Hungarian Geological Institute, Budapest.

Halobia charlyana Mojsisovics, 1874

Plate I, *Fig. 3*

1874. *Halobia charlyana* Mojsisovics, p. 27; Plate 4, *Figs. 4—6*
non 1892 *Halobia charlyana* — Rothpletz, p. 94; Plate 14, *Figs. 13—15*
1892. *Halobia cassiana* — Rothpletz, p. 95; Plate 14, *Fig. 18*
1899. *Daonella cassiana* — Volz, p. 28
1906a. *Daonella cassiana* — Renz, p. 33; Plate 3, *Fig. 4*
1906a. *Daonella styriaca* — Renz, p. 30; Plate 3, *Fig. 3*
1912. *Halobia charlyana* — Kittl, p. 107; Plate 5, *Fig. 7;* Plate 8, *Figs. 14—16*
1924. *Halobia charlyana* — Krumbeck, p. 290; Plate 108, *Figs. 12—15;* Plate 109, *Figs. 1—5*
1963. ? *Halobia charlyana* — Kobayashi, p. 121; Plate 6, *Fig. 20*
1966. *Halobia charlyana* — Scandone and de Capoa; Plate 4, *Fig. 1*
1967. *Halobia charlyana* — Scandone; Plate 8, *Figs. 1—2*
1970. *Halobia charlyana* — de Capoa, p. 69; Plate 16, *Figs.*
? 1973. *Halobia charlyana* — Allasinaz, Gutnic and Poisson; Plate 1, *Figs. 1—2*

Material: One right valve (internal cast).

Description: The shape is strongly asymmetric, the anterior hinge margin is remarkably short, the valve-convexity runs obliquely, the undivided halobiid auricle is flatly convex, the umbo without ribs up to 5 mm, the anterior radial ribs are low in section and tend to become finer posteriorly; posterior triangle without ribs. On the basis of these characters the specimen — despite of its juvenile state — can be undoubtedly ranged into the *H. charlyana* group. It bears three, weak growth-rugae altogether; its length/height ratio is 17,8/10,9 (i. e. 1,63).

Locality: From the coquina containing mainly embryonic valves, which was found in boulders at the foot of the ENE slope of the Szádvár, north of Szögliget.

Collector: M. Stefler, 46/1973.

Age: Middle part of the Lower Norian.

Reposition: Museum of the Hungarian Geological Institute, Budapest.

Halobia styriaca (Mojsisovics), 1874

Plate I, *Fig. 4—9;* Plate II, *Fig. 1—7*

1874. *Daonella styriaca* Mojsisovics, p. 10; Plate 1, *Figs. 4—5*
1874. *Daonella cassiana* Mojsisovics, p. 10; Plate 1, *Figs. 2—3* (non Fig. 13)
1874. *Daonella solitaria* Mojsisovics, p. 11; Plate 1, *Fig. 6*

1882. *Daonella styriaca* — GEMMELLARO, p. 467; Plate 1, *Figs. 1—2*
1899. *Daonella styriaca* — VOLZ, p. 27; Plate 1, *Fig. 1*
1906a. *Daonella styriaca* — RENZ, p. 30; Plate 3, *Fig. 2* (non 1 and 3)
1906b. *Daonella styriaca* — RENZ, p. 297; Plate 10, *Fig. 1*
1906. *Daonella styriaca* — ARTHABER; Plate 45, *Fig. 1*
1908. *Daonella styriaca* — FRECH; Plate 31, *Fig. 8*
1907. *Daonella styriaca* — WANNER, p. 196; Plate 9, *Fig. 6*
1912. *Halobia styriaca* — KITTL, p. 91; Plate 6, *Figs. 4—5*
1924. *Halobia styriaca* — KRUMBECK, p. 274; *Text-fig. 23;* Plate 9, *Fig. 8;* Plate 10, *Fig. 1—6*
1924. *Halobia cassiana* (MOJS.) emend. KRUMBECK, p. 139; Plate 10, *Fig. 7* and *9—10*
1925. ? *Halobia styriaca* — SIMIONESCU, p. 6; Plate 2, *Fig. 3*
1930. ? *Halobia styriaca* — KUTASSY, p. 205; Plate 3, *Fig. 2*
1955. *Daonella styriaca* — RENZ; Plate 3, *Fig. 5*
1959. *Monotis (Daonella) styriaca* — AUBOUIN; Plate 5, *Fig. 2*
1964. *Halobia styriaca* — DERCOURT; Plate 36
1966. *Halobia styriaca* — SCANDONE and DE CAPOA; Plate 3, *Fig. 2*
1967. *Halobia styriaca* — SCANDONE; Plate 4, *Fig. 3;* Plate 6; Plate 8, *Fig. 3*
1968. *Halobia styriaca* — MUTIHAC; Plate 5, *Figs. 2a—b*
1970. *Halobia styriaca* — DE CAPOA BONARDI, p. 95; Plate 9, *Figs. 1—10;* Plate 10, *Figs. 1—8*
1970. *Halobia cassiana* — DE CAPOA BONARDI, p. 111; Plate 11, *Fig. 1*
1970. *Halobia* cf. *cassiana* (MOJSISOVICS) 1874, emend. KRUMBECK 1921 — DE CAPOA BONARDI, p. 111; Plate 11, *Figs. 2* and *6*
1972. *Halobia styriaca* — BLEAHU ET AL. p. 16; Plate 6, *Figs. 4—7*
1974. *Halobia styriaca* — ALLASINAZ ET AL. Plate 1, *Fig. 4;* Plate 2, *Fig. 2*
1974. ? *Halobia halorica* — ALLASINAZ ET AL. Plate 2, *Fig. 4*

Material: About 30 impressions and internal casts.

Description: Flat or feebly convex valves. Ribs tend to fade towards the hinge margins, so rather broad triangular fields, only with concentric folds appear. Ribs broad and irregular in width. Halobiid auricle cannot be seen (however, this can be due to the flattening of the specimens, too).

On the basis of the ontogenetic changes in the shape and length/height ratio, the specimens studies here can be ranged into the *A* and *B* types of GRUBER, B. (1974). In some specimens (Plate I, *Figs. 4* and *6;* Plate II, *Fig. 7*) the length remains greater than the height during the ontogeny and the number of the ribs in relatively high *(type A);* in other specimens (Plate II, *Fig. 4*) the initially oval shape tends to become subcircular in adult stage, and the number of the primary ribs is comparatively low *(type B)*. The two types are connected by intermediate forms.

Locality: On the cattle-road above the public road, 300 m south of the SE outlet of Szőlősardó.

Rock-type: Grey cherty Pötschen Limestone.

Collector: K. Balogh, 1950.

Age: Lower part of the Lower Norian (Lac—1; Kerri Zone).

Reposition: Museum of the Hungarian Geological Institute, Budapest.

Family: Monotidae FISCHER, 1887. emend. ICHIKAWA, 1958
Genus: *Monotis* BRONN, 1830
Subgenus: *Monotis* s. str. ICHIKAWA, 1958
Type species: *Monotis (Monotis) salinaria* SCHLOTHEIM, 1820

Monotis (Monotis) salinaria salinaria (SCHLOTHEIM), 1820

PLATE III, *Figs. 1—13;* PLATE IV, *Figs. 1—13*

1820. *Pectinites salinarius* SCHLOTHEIM, p. 230
1830. *Monotis salinaria* — BRONN, p. 279; Plate 4, *Fig. 1*
1830. *Monotis inaequivalvis* — BRONN, p. 284; Plate 4, *Fig. 2*
1836. *Monotis salinaria* — GOLDFUSS, p. 139; Plate 121, *Fig. 1*

1836. *Monotis inaequivalvis* — GOLDFUSS, p. 140; Plate 121, *Fig. 2*
1849. *Avicula salinaria* — D'ORBIGNY, p. 200
1879. *Monotis salinaria* — MEDLICOTT and BLANFORD, vol. *2*, p. 637; Plate 2, *Fig. 6*
1892. *Monotis salinaria* — ROTHPLETZ, p. 91; Plate 13, *Figs. 1—3*
1904. *Monotis salinaria* — VOGEL, pp. 217—220; Plate 8
1906. *Monotis salinaria* — DIENER, p. 13; Plate 3, *Figs. 2—3* (non Fig. 1)
1906. *Monotis salinaria* — ARTHABER; Plate 49, *Fig. 2*
1907. *Monotis salinaria* — WANNER, p. 190; Plate 9, *Figs. 2—4*
1912. *Monotis salinaria* — KITTL, p. 169; Plate 10, *Figs. 1—6*
1924. *Monotis salinaria* — KRUMBECK, pp. 250—252; Plate 8, *Figs. 17* and *20* (non Figs. 18—19)
1925. *Monotis salinaria* — DIENER, p. 28; Plate 7, *Fig. 7*
1958. *Monotis (Monotis) salinaria salinaria* — ICHIKAWA, pp. 173—176; Plate 23, *Figs. 2—4* and *11*

Material: 17 left and 16 right valve fragments of which 10 and 5 specimens are inadequate for rib-counting. The length of the largest specimen is 48 mm.

Description: Nearly equal, strongly inequilateral, obliquely oval, posteriorly elongate valves. Length/height ratio 1,30 to 1, 36. Hinge margin short, its anterior part is always shorter than the posterior. The preumbonal flattened area is weakly separated from the other parts of the valve; its margin arches to the hinge margin, forming a blunt angle. The umbo is anteriorly placed, with smooth beak, its convexity — supposing equally-sized valves — is apparently similar on the two valves. The smooth posterior auricle is clearly delimited, with only growth-lines, which cross the posterior hinge margin at right or somewhat greater angles. Its shape is bluntly sloping posteriorly, usually somewhat concave.

The ornament consists of radial ribs, fine concentric growth-lines and especially in the posterior sector, 6 to 10 growth-zones. The primary ribs appear 1,5—2, the secondary ribs 3—8, the tertiary ribs 12 mm from the beak, respectively. The number of the primary ribs is 20—21, of which 5—6 are located within the 45° segment measured from the anterior hinge margin. The ribs increase in number by the intercalation of new ones into intervals of the antecendently formed ribs. The strength of ribs increases toward the valve margin. On larger specimens, above the fifth fold from the umbo, the primary and secondary ribs show a strong, characteristic break (with an anterior and then a posterior curve), or become wavy. This undulation may appear even in the vicinity of the umbo.

Remarks: The specimens studied here can be mostly ranged into the *M. (M.) salinaria salinaria* (SCHLOTHEIM) subspecies within the group of *M. (M.) salinaria* (SCHLOTHEIM). These differ from *M. (M.) salinaria haueri* KITTL by having more than 3 primary ribs within the anterior 45° angle segment. Somewhat coarser and more widely spaced ribs could have been recognized only in a single left valve fragment, however in this specimen rib-counting was impossible, thus its subspecific classification remained uncertain. Taking all thing into consideration, here appears a fairly clear *M. (M.) salinaria salinaria* monoculture.

Locality: On the NW side of the cart-road leading 200 m of SW from the SW outlet of Silicka Brezova (Szádvárborsa), South Slovakia.

Rock-type: Red-coloured Hallstatt Limestone, variegated in some places with lighter grey mottles.

Collector: K. BALOGH (11/1940, VII. 16. BK).

Age: Deeper part of the Middle Norian (Alaunian); *see* MOSTLER, H.—OBERHAUSER, R.—PLÖCHINGER, B. 1967, p. 32).

Reposition: Museum of the Hungarian Geological Institute, Budapest.

REFERENCES

ALLASINAZ, A.—GUTNIC, M.—POISSON, A. [1974]: La formation de l'Isparta Cay: Calcaires à Halobies, Grès à plantes et Radiolarites d'âge Carnien (?) — Norien (Taurides — Région d'Isparta — Turquie). — Schriftenreihe erdwiss. Komm., Österreich. Akad. Wiss., **2**, pp, 223—235, Wien.

ARTHABER, G. V. [1906]: Die alpine Trias des Mediterrangebietes. In: FRECH, F.: Lethaea geogn. II. Das Mesozoikum, **1**, Trias, pp, 223—472, Stuttgart.

ARTHABER, G. V. [1914]: Die Trias von Bithynien (Anatolien). — Beitr. Paläont. Österr.—Ungarns u. d. Orients, **27**, pp, 85—206. Wien.

ASTACHOVA, T. V. [1971]: Triasovi dvostulkovi igolovonogi moluski Krimu. — A. N. Ukrain. RSR. Inst. Geol. Nauk. Kiev. 116 p.

AUBOUIN, J. [1959]: Contribution à l'étude géologique de la Grèce septentrionale: les confins de l'Epire et de la Thessalie. — Ann. géol. Pays hellén. Ser. 1. **10**, 25+485 p., Athènes.

BALOGH, K. [1953]: Geologische Studien in der Umgebung von Plešivec (Pelsőc, 1942), ferner zwischen Bódvaszilas und Jósvafő (1943). — Rel. annuae Inst. Geol. Publ. Hung., 1943, Letzter Teil, pp, 61—67.

BARTKÓ, L. [1953]: Conditions géologiques du Mont Nagyhegy de Pelsőc (Plešivecka Planina). — Rel. annuae Inst. Geol. Publ. Hung., 1941—42. Tome dernier, pp, 43—53.

BYSTRICKÝ, J. [1964]: Slovenský Kras. Stratigrafia a Dasycladaceae mezozoika Slovenského Krasu. — Ústr. ústav geol. Bratislava, 204 p.

BITTNER, A. [1899]: Trias Brachiopoda and Lamellibranchiata. — Pal. Indica. Ser. 15. Himalayan Fossils, **3**, 2, 76 p., Calcutta.

BRONN, H. [1830]: Über die Muschel-Versteinerungen des süddeutschen Steinsalzgebirges, welche bisher unter dem Namen *Pectinites salinarius* zusammenbegriffen wurden. — Neues Jb. f. Min. etc. **1**, pp, 278—285, Heidelberg.

DE CAPOA BONARDI, P. [1970]: Le Daonelle e le Halobie della serie calcareo-silico-marnosa della Lucania (Appennino Meridionale). — Boll. Soc. Natur. Napoli, **78**, 130 p., Napoli.

DESCHASEAUX, C. in PIVETEAU [1952]: Traité de Paléontologie II. Classe des Lamellibranches. — Paris, pp, 230—364.

DERCOURT, J. [1964]: Contribution à l'étude géologique d'un secteur du Peloponnèse septentrional. — Ann. geol. Pays Helléniques. Ser. 1, **15**, 418 p., Athènes.

DIENER, C. [1906]: Notes on an upper-trias fauna from the Pishin-District, Baluchistan, collected by E. VREDENBURG in the year 1911. — Records Geol. Surv. India, **34**, 1, pp. 11—21, Calcutta.

DIENER, C. [9108]: Ladinic, Carnic and Noric Faune of Spiti. — Palaeont. Indica. Ser. 15, **5**, Calcutta, 157 p.

DIENER, C. [1925]: Leitfossilien der Trias. — In: GÜRICH, G.: Leitfossilien **4**, Berlin, 118 p.

D'ORBIGNY, A. [1849): Prodrôme de Paléontologie stratigraphique universelle etc. **1**, Paris.

FRECH, F. [1908]: Lethaea geognostica 2. Teil. Das Mesozoikum. Bd. I. Die Trias. 623 p. Stuttgart.

GEMMELLARO, G. G. [1882]: Sul Trias della regione occidentale della Sicilia. — Mem. R. Acc. Lincei. Ser. 3, **12**, Roma, pp. 451—473.

GOLDFUSS, A. [1836]: Petrefacta Germaniae, **2**, Düsseldorf, pp. 69—140.

GRUBER, B. [1975]: Unternorische Halobien (Bivalvia) aus Bosnien, Jugoslawien. — Sitz. ber. Österr. Akad. Wiss., math.-nat. w. Kl. Abt. I. **183**, 4—7, pp. 119—130.

GÜMBEL, C. W. [1861]: Geognostische Beschreibung des bayrischen Alpengebirges.

ICHIKAWA, K. [1954]: Early Neo-Triassic Pelecypods from Iwai, near Itsukaichi, Tokyo Prefecture. — Japanese Journ. Geol. Geogr. Transact., **25**, 3—4, pp. 177—181, Tokyo.

ICHIKAWA, K. [1958]: Zur Taxionomie und Phylogenie der triadischen „Pteridae" (Lamellibranch.) mit besonderen Berücksichtigung der Gattungen *Claraia, Eumorphotis, Oxytoma und Monotis.* — Palaeontographica, **3**, Abt. A., pp. 131—214, Stuttgart.

KAJMAKOVIĆ, R. [1961]: Prilog poznavanju s. i g. trijasa okol. Klinca u SZ Bosni. — 3. Congr. Géol. de Yougoslavie. **1**, Titograd, pp. 225—234.

KITTL, E. [1912]: Materialien zu einer Monographie der Halobiidae und Monotidae der Trias. — Result. wiss. Erforsch. Balatonsees. **1.**, 1, Pal. 2, Wien, 229 p.

KOBAYASHI, T. [1963]: On the triassic Daonella beds in Central Pahang, Malaya. (Contributions to the geology and paleontology of southeast Asia. 3.) — Jap. Journ. Geol. Geogr., Trans, **34**, 2—4, Tokyo, pp. 101—162.

KRUMBECK, L. [1924]: Die Brachiopoden, Lamellibranchiaten und Gastropoden der Trias von Timor. **2.** Paläontologischer Teil. — Paläont. Timor, **13**, 275 p. (pp. 144—417), Stuttgart.

KRYSTYN, L.—Gruber, B. [1974]: Daonella lommeli (Wissmann) im Hallstätter Kalk der Nördlichen Kalkalpen (Österreich). — N. Jb. Geol. Pal. Mh. **1974**, 5, pp. 279—286, Stuttgart.

KUTASSY, A. [1930]: Triadische Fossilien von portugiesischen Timor. — Földt. Közl., **60**, pp. 200—209, Budapest.

LEONARDI, G. [1964]: Note stratigraphico-sedimentologiche sul Ladinico della conca di Sappada (Belluno). — Ann. Univ. Ferrara. N. S., **9**, Sc. geol. e min., **3**, 10, Ferrara.
LEONARDI, P. [1967]: Le Dolomiti. Geologia dei Monti tra Isarco e Piave, **1—2**, 1919 p., Rovereto.
LEPSIUS, R. [1878]: Das westliche Süd-Tirol, 368 p., Berlin.
MARIANI, E. [1893]: Note paleontologiche sul Trias superiore della Carnia occidentale. — Ann. R. Ist. Tecn. Udine. Ser. 2, **11**, 25 p., Udine.
MEDLICOTT—BLANFORD, [1879]: Manual of Geology of India, **2**.
MOJSISOVICS, E. v. [1874]: Über die triadischen Pelecypoden-Gattungen Daonella und Halobia. — Abh. Geol. R. A. Wien, **7**, 2, 39 p.
MOSTLER, H.—OBERHAUSER, R.—PLÖCHINGER, B. [1967]: Die Hallstätter Kalk-Scholle des Burgfelsens Hernstein (N.-Ö.). — Verh. Geol. B.-A. Wien, pp. 27—36.
MUTIHAC, V. [1968]: Structura geologica a compartimentului nordic din sinclinalul marginal extern (Carpatii orientali). — Ed. Acad. R. S. Romania, p. 104, Bucuresti.
MÜLLER, A. H. [1958]: Lehrbuch der Paläozoologie. **2.** Invertebraten. 1. Protozoa, Mollusca I. — Jena.
RENZ, C. [1906*a*]: Ueber Halobien und Daonellen aus Griechenland, nebst asiatischen Vergleichsstücken. — N. Jb. Min. etc. 1906/I, pp. 27—40, Stuttgart.
RENZ, C. [1906*b*]: Ueber die mesozoische Formationsgruppe der südwestlichen Balkanhalbinsel. — N. Jb. Min. etc. Beil.-Bd., **21**, pp. 213—301, Stuttgart.
RENZ, C. [1955]: Stratigraphie Griechenlands. — Inst. Geol. and Subsurf. Research, 367 p., Athenes.
RIEBER, H. [1969]: Daonellen aus der Grenzbitumenzone der mittleren Trias des Monte San Giorgio (Kt. Tesin, Schweiz. — Ecl. geol. Helvetiae, **62**, 2, Basel. pp. 657—683.
ROTHPLETZ, A. [1892]: Die Perm-, Trias- und Juraformation auf Timor und Rotti. — Palaeontogr., **39**, pp. 57—106, Stuttgart.
SALOMON, W. [1895]: Geologische und palaeontologische Studien über die Marmolata. — Palaeontogr., **42**, 210 p., Stuttgart.
SCANDONE, P. [1967]: Studi di geologia lucana: la serie calcareo-silico-marnosa e i suoi rapporti con l'Appennino calcareo. — Boll. Soc. Natur. Napoli, **76**, 2, Napoli, 175 p.
SCANDONE, P.—DE CAPOA BONARDI, P. [1966]: Sulla posizione stratigraphica e l'eta dei livelli a Daonella e ad Halobia in Lucania. — Boll. Soc. Natur. Napoli, **75**, pp. 30—39, Napoli.
SCHAFHÄUTL, [1863]: Südbayerns Lethaea geognostica.
SCHLOTHEIM, E .F. [1820]: Petrefactenkunde. 62+437 p., Gotha.
SILBERLING, N.—TOZER, E. T. [1968]: Biosgratigraphic classification of the marine Triassic in North America. — Geol. Soc. Amer., Spec. Pap., **110**, 63 p., Boulder (Col.).
SIMIONESCU, J. [1925]: Paturile cu Daonella in Dobrogea. — Acad. Rom. Publ. Fondului Vas. Adamachi., **9**, 43, 9 p., Bucureşti.
SPECIALE, A. [1967]: Fossili del Trias medio delle valli Trompia e Sabbia. — Riv. Ital. Paleont. e Strat., **73**, 4, pp. 1055—1140, Milano.
STEFANOV, S. A. [1963]: Vertreter der Familie Halobiidae aus dem Ladin von Golo Bardo (SW Bulgarien). — Tr. geol. Bulgarija. Ser. pal., **5**, pp. 89—107, Sofia.
STOPPANI, A. [1858]: Les pétrifications d'Esino, ou description des fossiles appartenant au depot triassique supérieur des environs d'Esino en Lambordie. — Paléont. Lombarde, **1**, 151 p., Milano.
STUR, D. [1865]: Über die Formationen des bunten Sandsteins etc. — Verh. Geol. R.-A. Wien.
TURCULET, I. [1967]: Consideratii stratigrafice si paleontologice asupra calcarelor de Hallstatt din Dealul Vailor (Rarau—Bucovina). — An. Stint. Univ. „AL. I. CUZA", Iaşi (S. N.), Sect. IIb., **13**, pp. 73—82.
VOGEL, F. [1904]: Beiträge zur Kenntnis der mesozoischen Formationen in Borneo. — Samml. Geol. Reichsmus. Leyden, **7**, 2.
VOLZ, W. [1899]: Beiträge zur geologischen Kenntnis von Nordsumatra. — Zeitschr. Deutsch. Geol. Ges., **51**, 1, 61 p., Berlin.
WANNER, J. [1907]: Triaspetrefacten der Molukken und des Timorarchipels. — Neues Jb. Min. etc. Beil.-Bd. **24**, pp. 167—220, Stuttgart.
WISSMANN in MÜNSTER [1841]: Beiträge zur Petrefactenkunde. **4.**

Manuscript received, June 30, 1976

PROF. DR. KÁLMÁN BALOGH
Department of Geology
and Palaeontology
Attila József University
H—6722 Szeged, Egyetem u. 2.
Hungary

EXPLANATION OF THE PLATES I—IV

All the speciment in natural size — Photo: MRS. PELLÉRDY.

PLATE I

1. *Daonella lommeli* (WISSMANN). — Škalica-hill. — Wetterstein Limestone; Longobardian. — Coll. by L. BARTKÓ, 1940 (No. 24)
2. *The same* (juvenile right valve). — From the same place. — Coll. by L. BARTKÓ, 1940 (No. 21)
3. *Halobia charlyana* MOJSISOVICS. — Szádvár. — Hallstatt Limestone; Julian. — Coll. by M. STEFLER, 46/1973 (No. 14).

4—7. *Halobia styriaca* MOJSISOVICS. — Szőlősardó. — Pötschen Limestone; Lower Norian. — Coll. by K. BALOGH, 1950.

4. Internal cast of a left valve *(No. 15)*
5. The same *(No. 16)*
6. Internal cast of a right valve *(No. 18)*
7. Internal cast of a left valve *(No. 5)*

PLATE II

1—7. *Halobia styriaca* MOJSISOVICS. — Szőlősardó. — Pötschen Limestone; Lower Norian. — Coll. by K. BALOGH, 1950

1. Internal cast of a left valve *(No. 17)*
2. Impression of a right valve *(No. 3)*
3. Internal cast of a right valve *(No. 13)*
4. The same *(No. 2)*
5. Internal casts of two left valves *(No. 20)*
6. Impression of a left valve *(No. 15)*
7. The same *(No. 19)*

PLATE III

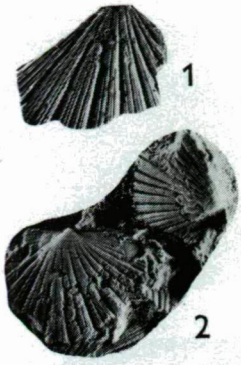
1—13. *Monotis (Monotis) salinaria salinaria* (SCHLOTHEIM). — Left valves. — Silicka Brezova (Szádvárborsa). — Deeper part of the Alaunian (Middle Norian); Hallstatt Limestone. — Coll. by K. BALOGH, 1940

1=No. 9
2=No. 11
3=No. 36
4=No. 37
5=No. 33
6=No. 23
7=No. 7
8=No. 38
9=No. 34
10=No. 6
11=No. 40
12=No. 30
13=No. 31

PLATE IV

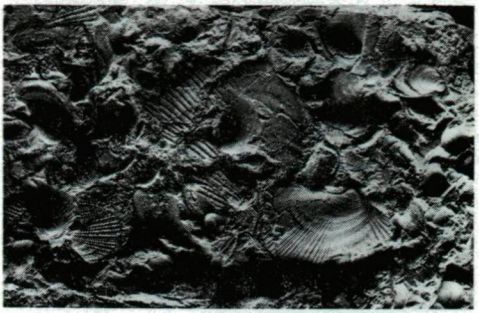
1—13. *Monotis (Monotis) salinaria salinaria* (SCHLOTHEIM). — Right valves. — Silicka Brezova (Szádvárborsa). — Deeper part of the Alaunian (Middle Norian); Hallstatt Limestone. — Coll. by K. BALOGH, 1940

1=No. 8
2=No. 27
3=No. 25
4=No. 7
5=No. 22
6=No. 25
7=No. 35
8=No. 39
9=No. 12
10=No. 28
11=No. 26
12=No. 29/*a*
13=No. 32

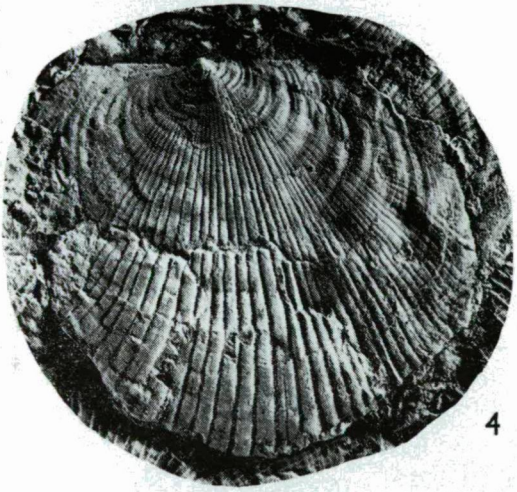


1

2



3

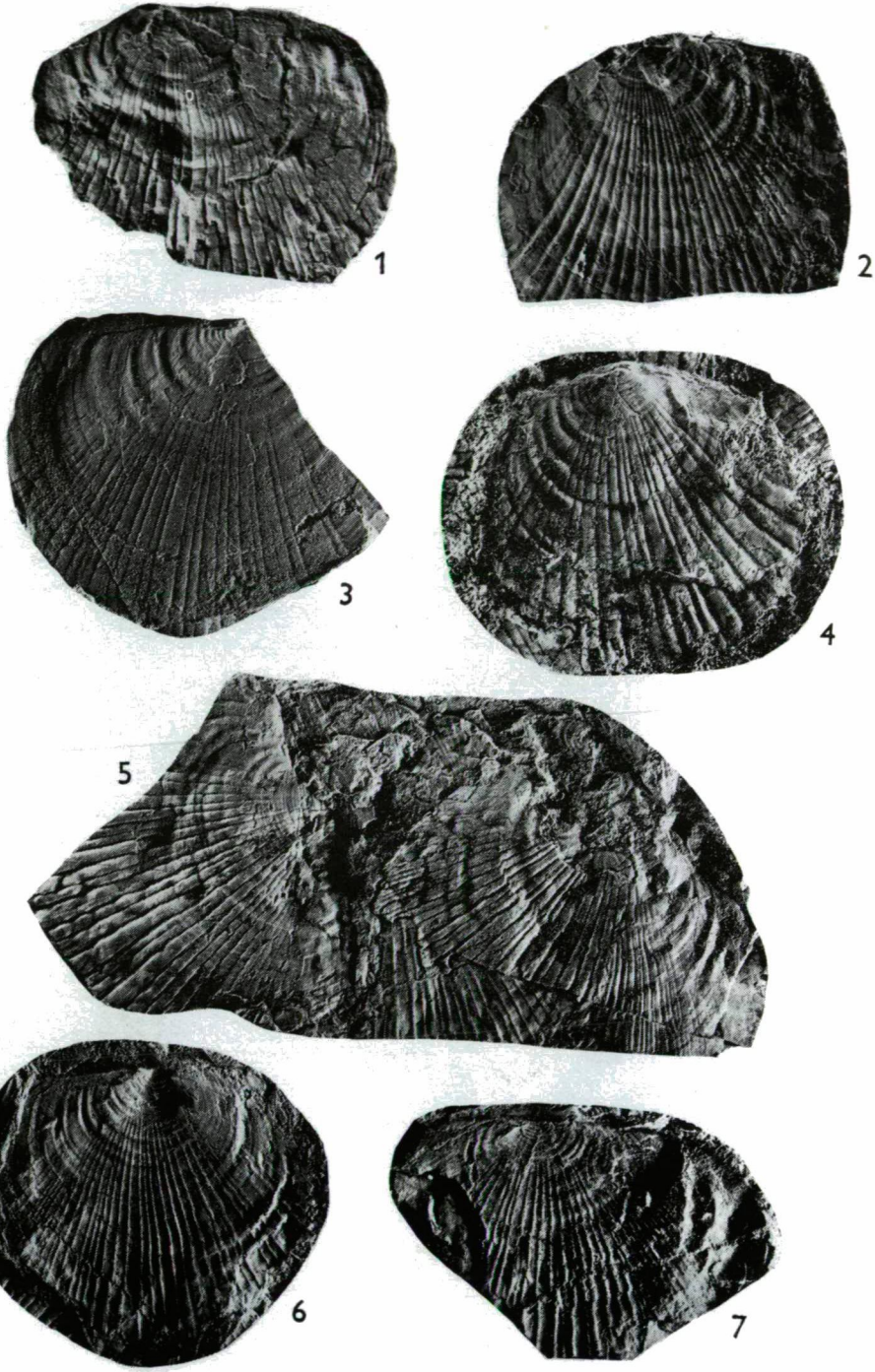


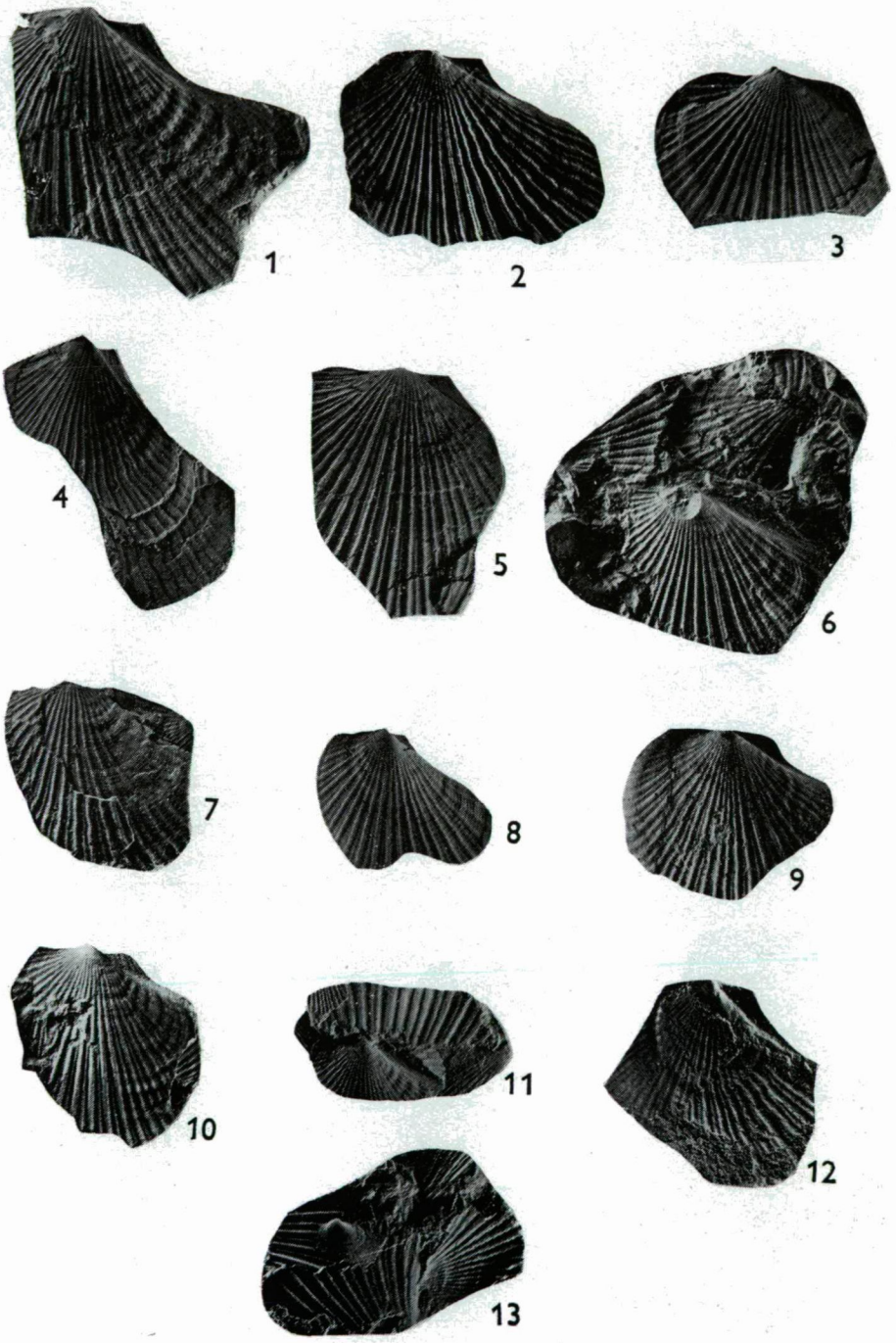
4

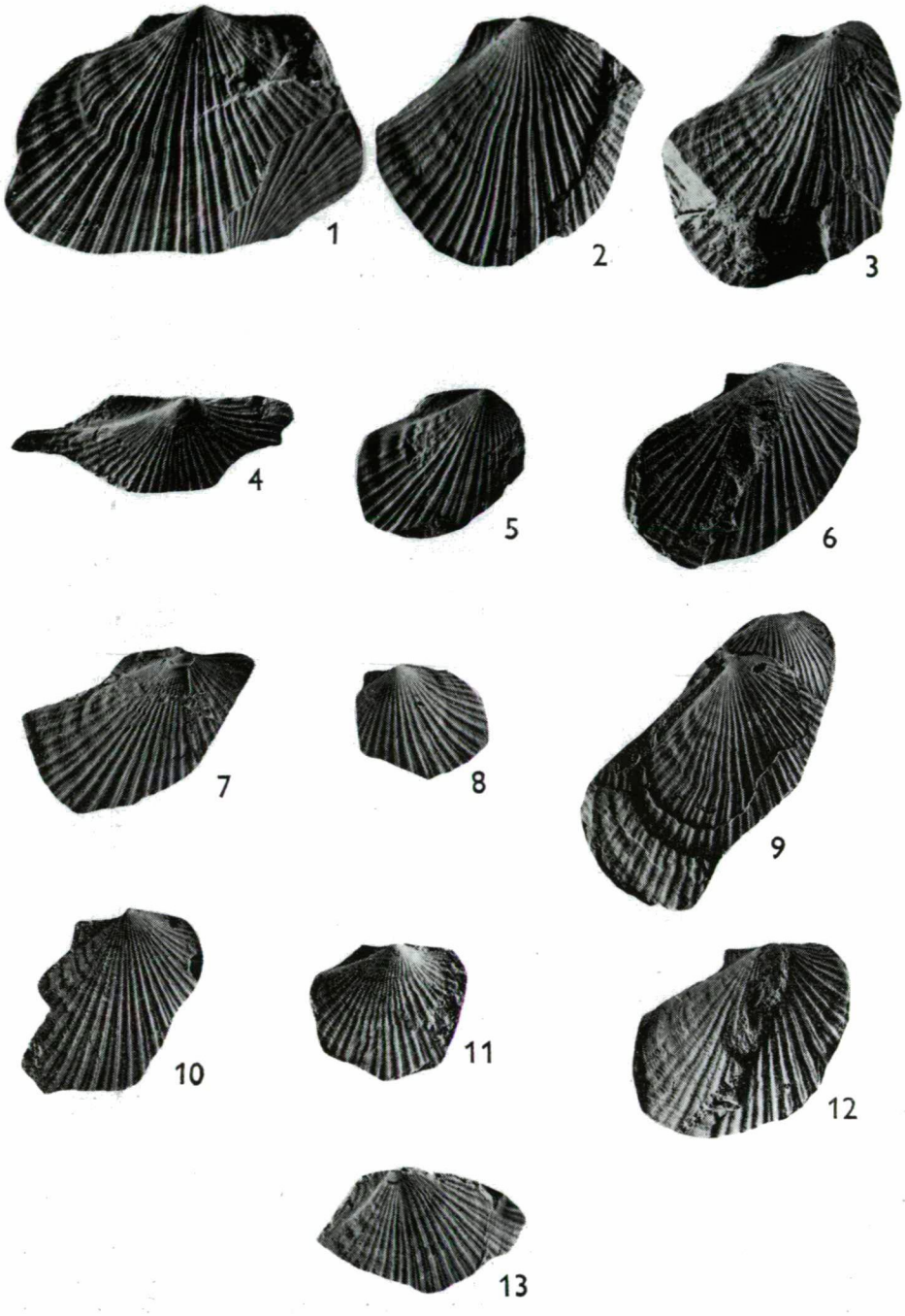
5

6

7


1
2
3
4
5
6
7


1
2
3
4
5
6
7
8
9
10
11
12
13


1
2
3
4
5
6
7
8
9
10
11
12
13